

What is claimed is:

1. An implantable medical device, comprising:
5 a housing for containing electronic circuitry;
first and second conductive portions of the housing separated by an insulator;
and,
circuitry within the housing connected to the first and second housing portions
for transmitting or receiving a modulated radio-frequency carrier at a specified carrier
10 frequency, wherein the first and second housing portions constitute a dipole antenna.
2. The device of claim 1 wherein the first and second housing portions are opposite
halves of the housing separated by a layer of insulating dielectric material.
- 15 3. The device of claim 1 wherein the first and second housing portions are opposite
halves of the housing separated by a header compartment made of insulating dielectric
material.
4. The device of claim 1 further comprising therapy circuitry and wherein the
20 therapy circuitry and the transmitter/receiver circuitry are contained in different housing
portions.
5. The device of claim 3 further comprising a battery contained in one housing
portion apart from other circuitry in the device.
- 25 6. The device of claim 3 further comprising a battery and wherein the battery and
transmitter/receiver circuitry are contained in one housing portion apart from other
circuitry in the device.

7. The device of claim 1 further comprising a battery contained in one housing portion apart from other circuitry in the device.

8. The device of claim 1 further comprising a battery and wherein the battery and transmitter/receiver circuitry are contained in one housing portion apart from other circuitry in the device.

9. The device of claim 1 wherein the dimensions of the first and second housing portions are such that a significant portion of radio-frequency energy delivered to the antenna at the specified carrier frequency is emitted as far-field radiation.

10. The device of claim 1 wherein the electrical length of the antenna is approximately one-half wavelength or greater of the radio-frequency carrier at the specified frequency.

11. The device of claim 1 further comprising an antenna tuning circuit for matching the impedance of the antenna to the transmitting/receiving circuitry at a specified carrier frequency by loading the antenna with inductance or capacitance.

12. The device of claim 11 wherein the tuning circuit comprises a balun transformer for converting between a single-ended signal generated or received by the transmitter/receiver circuitry and a differential signal generated or received by the antenna.

13. The device of claim 11 further comprising a variable capacitor for adjusting the resonant frequency of the antenna.

14. The device of claim 1 wherein the device is a cardiac rhythm management device having rhythm control circuitry electrically connected to one or more electrodes adapted for disposition within or near a heart by one or more therapy leads.

5 15. The device of claim 14 further comprising a filter connected to a therapy lead for blocking radio-frequency signals from the rhythm control circuitry.

16. The device of claim 15 wherein the filter is a notch filter.

10 17. A method for transmitting and receiving radio-frequency signals in an implantable medical device, comprising:

transmitting or receiving a modulated radio-frequency carrier at a specified carrier frequency to or from a dipole antenna formed by first and second conductive portions of a housing; and,

15 emitting a significant portion of radio-frequency energy delivered to the antenna at the specified frequency as far-field radiation.

18. The method of claim 17 further comprising matching the impedance of the antenna to the transmitting/receiving circuitry at a specified carrier frequency by loading
20 the antenna with inductance or capacitance using an antenna tuning circuit.

19. The method of claim 17 further comprising converting between a single-ended signal generated or received by the transmitter/receiver circuitry and a differential signal generated or received by the antenna with a balun transformer.

25

20. The method of claim 18 further comprising adjusting the resonant frequency of the antenna to a specified carrier frequency with a variable capacitor.